



The RAD WASTE NEWS

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FIRST IOC LICENSED DOD LOW-LEVEL RADIOACTIVE WASTE GOES TO WCS

BY MIKE STYVAERT

On April 14, 1999 this office made the first DoD shipment of NRC-licensed DoD radioactive waste to the Waste Control Specialists (WCS) facility in Andrews County, Texas. The estimated 20,000 cubic-foot waste stream contained a small concentration of depleted uranium (less than 200 pCi/g) and leachable lead from bullet fragments.

The waste was created as part of the Lake City Army Ammunition Plant, Area 10 decommissioning. Our characterization data indicated the lead levels were acceptable for land disposal and the resultant decommissioning waste would qualify as LLRW. However, the first 10,000 cubic feet of decommissioning waste we shipped to Envirocare last October failed TCLP for lead. The cost for treatment/disposal of a mixed waste under the IOC basic ordering agreement (with Envirocare) is significantly more expensive than the LLRW disposal un-

der the Corps of Engineers contract (with Envirocare).

Once the material failed TCLP at Envirocare, the Environmental Protection Agency and the Missouri Department of Natural Resources considered our entire 30,000+ ft³ waste stream as a Resource Conservation Recovery Act (RCRA) waste. Under RCRA rules we had 90-days (although the installation requested and received a 180-day temporary storage authorization) to remove the material from Lake City.

Our decommissioning contractor (Allied Technology Group) explored disposal options for us and suggested the waste could go to WCS as Texas exempt material. We notified the Nuclear Regulatory Commission (NRC) of our intent to transfer the NRC-licensed material to a non-

(WCS....continued on page 10)

WHAT RADIONUCLIDE(S) ARE WE SHIPPING ? - SOME PRACTICAL EXPERIENCE

BY DAVE HORTON

When we ship radioactive material for disposal, we must correctly identify the radionuclide(s) we have packaged. We do this to ensure compliance with Department of Transportation regulations and to meet the acceptance criteria for the processing or disposal site receiving the material.

On remediation projects we usually send off

samples of our waste stream, whether it is soil or debris, for analysis. The laboratory tells us what radionuclide(s) we have and their concentration. They usually express the concentration as picocuries per gram (pCi/g). By multiplying the weight of material by the concentration of the radionuclide,

(Radionuclides....continued on page 10)

FROM THE DESK OF THE CHIEF

Do you read this column? YES!!!! I received two calls from Army organizations who wish to partner with us on our Army Contaminated Equipment Retrograde Team (ACERT) mission. In my last column, I said that we need reservists to round out our team. Two predominantly Department of the Army civilian organizations stepped forward asking us if we could use them as well. We are now coordinating with them on potential memorandums of agreement for their services. When we complete those memorandums, we will announce who they are.

I represented the Department of Defense at the Low-Level Waste (LLW) Forum meeting in June. The LLW Forum is an association of state and compact representatives, appointed by Governors and compact commissions, established to facilitate state and compact implementation of the Low-Level Radioactive Waste Policy Act of 1980 and the Low-Level Radioactive Waste Policy Amendments Act of 1985 and to promote the objectives of low-level radioactive waste regional compacts. The LLW Forum provides an opportu-

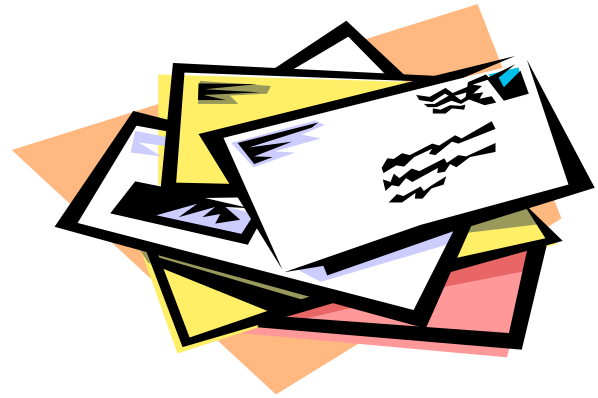
Our goal remains to ensure safe, efficient, and legally compliant LLRW disposal.

nity for state and compact officials to share information with one another and to exchange views with officials of federal agencies and other interested parties.

LLW Forum Participants include representatives of regional low-level radioactive waste compact commissions, states that are not members of low-level radioactive waste compacts, and states that host regional disposal facilities.

While the participants discussed many topics, a few have special interest for the Department of Defense.

- The representative from South Carolina announced that Barnwell, one of three major disposal sites, has enough capacity for



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only 10 more years. This could have significant impact on where we dispose of Low Level Radioactive Waste (LLRW) and how much we pay for that disposal.

- Many states and compacts are relooking their definition of LLRW. Stricter definitions may mean more regulation of import, export, and disposal of DOD's LLRW.
- The Corps of Engineers discussed the disposal of FUSRAP waste in a panel that contained the Radiation Control Program Manager from the states of New York and California. There was a significant debate about FUSRAP waste in RCRA Part C landfills. As a result, the LLW Forum passed a resolution asking the Corps of Engineers to gain approval in writing from affected states and compacts when exporting, importing, and disposing of FUSRAP waste.

These remain interesting times for disposal of LLRW. We will continue to follow the developments in each of the states and compacts as they work through these issues. Our goal remains to ensure safe, efficient, and legally compliant LLRW disposal.

Rosalene Graham

FAQ WHEN TRAVELING IN THE KOREA AND JAPAN BY DEREK CORNETTE

Editor's Note: *Derek Cornette is a seasoned over-seas traveler. We hope that these tips can help you avoid problems when traveling to the Far East.*

1. Should I get a rental car while in Korea?

No!!! I would recommend making arrangements with the command you are visiting to have a driver and vehicle for long official trips in Korea. Rental cars are very expensive and if you are involved in a wreck the consequences can be severe. The Koreans see driving as a challenge and as a frustration venting mechanism. Example: If you inadvertently cut someone off they will follow you and try to purposefully cut you off or run you off the road. Our bus driver tried to set things straight on the interstate at 55 mph. Blood pressure check.

In the major cities, mass transit is very good. The trains, subways, buses and taxis move you through the towns cheaply and without the worries.

2. Should I get a rental car in Japan?

NO!!! Again only for the brave or foolish. Remember in Japan you drive on the other side of the road. That takes a while to get used to. Rental cars are expensive and gasoline is about a dollar a liter. I would recommend arranging for a driver and vehicle for short trips. The Japanese are generally not as aggressive as the Koreans but that other side of the road thing is a killer.

3. How far is it from here to there?

Well, in both countries distance is measured in time not miles. It may only be twenty miles but it will take anywhere from an hour to three hours to get there. Allow plenty of time to get from point A to B. Schedule your meetings accordingly.

4. Do I have to pay the airport exit fees?

It depends. Sometimes the airport fees are included in the cost of the airline ticket. In Korea, you need an official exit form from the command you are visiting and you will not have to pay the exit tax. Without this form you will be charged about \$7 US dollars depending on the exchange rate. In Japan the exit fees are higher, about \$25,

and there is no form that exempts you from paying.

5. What about excess baggage?

This can be costly. US carriers cut you slack on the charges. On a US carrier, one extra bag under 70 lbs costs around \$50. If the bag weighs more than 70 lbs it may cost up to \$150. Bummer. Well, on China Airlines they only allow 20 kg of checked baggage and anything over is \$19/kg. Yikes. American carriers usually allow 2 bags weighing up to 70 lbs each, plus a carry on. If excess baggage is not on your orders you will not be reimbursed. Be careful.




6. What about pocket knives, or utility tools?

Airports in America don't have a problem with small pocket knives or utility tools, but not Korea or Japan. If you have to take these items put them in your checked baggage. If not, you face a lot of questions, a lot of time trying to explain why you have them to people who do not understand English, having the items confiscated or being arrested. These folks consider metal fingernail files and scissors as dangerous items. Think before you put something in your carry on luggage.

7. Is the bullet-train an economical way to get around Japan?

Depends. Compared to the driving problems, road tolls, and gasoline prices, the bullet-train is a fast way of traveling around Japan. It is not cheap though. A one-way fare from Yokohama to Hiroshima on the early-bird special is \$100, but at 180 mph it gets you there quicker than driving. You have to sacrifice the countryside for speed.

Well, these comments are based on my own experiences while traveling, I hope this helps anyone heading over to Japan or Korea.

For more information on our latest Far East Trip    see the article on page 11.

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ACERT TEAM INSPECTS MILVAN IN KOREA



U.S. Army Contaminated Equipment Retrograde Team (ACERT) members inspect a milvan located in Korea. Mr. Rick Holthouser (above) secures a storage cabinet after completing inventory of contents. The milvan is part of the Team's strategic plan to preposition equipment and supplies world-wide for use by the ACERT. The milvans are loaded with required supplies and equipment that will be available for the Team in support of a contingency operation. The ACERT mission is to provide a combat/non-combat team for world-wide response for accidents/incidents involving the retrograde of radioactive contaminated equipment. A milvan is also pre-positioned in Pirmasens, Germany. Below Mr. Derek Cornette continues with the inventory. The Team also performs test checks on the electrical systems, generators, batteries, etc. Work continues on pre-positioning support milvans in other areas world-wide. For further information or questions contact Mr. Bill Metcalf, DSN 793-2248, email metcalfw@ioc.army.mil.



LATEST PROCESSOR ON CONTRACT BY KELLY CROOKS

Environmental Management and Controls, Inc. (EMC), Turlock, CA is the latest addition to our contracted radioactive waste processors. We have used them periodically over the last couple of years as a subcontractor and think they can provide valuable services to the Army's low-level radioactive waste disposal program. Therefore, we recently signed them up to a Basic Ordering Agreement similar to those we have with the Richland Consolidation Facility, Hanford, WA and the Chem-Nuclear Consolidation Facility, Barnwell, SC.

As EMC is about 30 miles down the road from the Lawrence Livermore National Laboratory (LLNL), our first delivery order was for EMC to consolidate the tritium devices destined for recycle at LLNL. They can receive and hold our small shipments, from say National Guard or Reserve Units, and periodically make bulk shipments to LLNL. That prevents us from inundating LLNL with shipments every week and adds a level of quality assurance for the containers we ship to LLNL.

Along that same tritium vein, we plan to give EMC a shot at breaking down the tritium devices before sending to LLNL. We hope that will reduce the recycle cost by giving the low-tech, labor intensive work to the low cost processor vs the higher cost lab.

We are also experimenting with a new way of getting the small shipments from the generator to the processor. EMC is developing shipment kits to provide the installation to make the shipment back to EMC. The kit will have the shipping container (size and type based on inventory), markings/labels, shipping papers, instructions, and EMC's Federal Express number. The generator just follows directions and makes a regular Fed Ex shipment. Hopefully, this will reduce costs to ship from all our small generators (which will allow us to ship from more places each year), but maybe more importantly reduce the time to get the stuff off-post and out of the installation's hair.

We will let you know how these things progress and you generators let us know your experiences and if they are good or bad. We will keep trying new ways to serve you better and do more with what we got.

PERMITS WHAT, WHY AND WHEN BY JUDY WOODSON

You may ask, what is a permit, why do I need a permit and when am I required to have a permit? The Safety/Rad Waste Team obtains various permits or authorizations to transport, export, import or dispose of radioactive waste. We use permits throughout the radioactive waste transport and disposal process. Before we make a shipment to a processing or disposal facility or from one installation to another, we first must make sure all applicable permits are in place.

Compacts have rules regulating the export, import or disposal of radioactive waste and many require the proper paperwork before we can move your waste. For example, the Southwestern Compact requires the generator obtain permission via a petition to export low-level radioactive waste out of the compact to Envirocare or Barnwell.

Before we export waste out of the Rocky Mountain Compact, we must first apply for an export permit. We submit applications on an installation basis and the Compact Board provides a permit for the specific waste type and volume with an expiration date for the disposal. The conditions of the Rocky Mountain export permit is notification to the board in writing when we exported the waste and 5 days before the actual disposal action occurs.

When we transport within a state or through a state, a permit may be required. For example, before you transport waste within or through the State of Mississippi we must get a radioactive waste transport permit from the Mississippi Emergency Management Agency. They issue permits to us by military service (i.e., Air Force, Army, or Navy). In addition, although we have the permit in place, we must notify the agency in writing before each shipment through or within the State.

Permits may be required to bury waste at a disposal facility. We generate and maintain the permits to bury waste at the Hanford burial site for the Department of Defense. To bury material at Hanford you must have either a low-level radioactive waste, naturally occurring and accelerator produced radioactive material (NARM), or exempt material Generator Site User permit. Hanford only accepts LLRW from the Northwest and Rocky Mountain compacts, and NARM and exempt waste from

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licensed recipient in accordance with the provisions of 10 CFR 40.51(b)(4). Under State of Texas law, Waste Control Specialists can accept source material that meets the requirements for exempt material as defined in 25 TAC Section 285.251(c) (1), which is the Texas agreement State counterpart to 10 CFR 40.13(a).

The NRC elevated our WCS request to the five presidential appointees (i.e., the Commission) who preside over the NRC. The Commission ruled (April 5, 1999) that there are no specific NRC approval requirements and that we were not required to manifest the material in accordance with 10 CFR 20.200 . Our shipments started a week later. The WCS option saved the Army over 1. M.

We wish to convey our sincere thanks to the Nuclear Regulatory Commission staff, Mr. Bill Melton of Lake City, Mr. Frank Whitaker of the Allied Technology Group and Mr. Bill Dornsife of WCS. Their cooperation and attentive customer service was the difference in ensuring the Army found a responsible cost effective alternative to a difficult situation.

Our point of contact for this issue is Mr. Michael Styvaert, Health Physicist, (309) 782-0880, electronic mail address StyvaertM@ioc.army.mil.

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we can assign the correct activity to a shipment of waste.

When we travel to installations to pickup excessed materials, we often rely on the installation to tell us what radionuclide and activity they have in their materials. When we pack items for shipment, we verify that the provided information is correct. On a recent job, a broker was surveying a box of tritium compasses before packing them for shipment. He was surveying it with a gamma radiation detector. A person from the installation said something to the effect of, That's dumb, tritium only has a low energy beta, he won't get any readings above background. They were correct about the tritium, but some of you that have been around these shipments can predict what happened. The box of tritium compasses had a gamma reading readily distinguishable from background. So what happened? Why did we get a high reading from a box of tritium compasses? Because some were radium.

At another installation I had an inventory that read one small bottle with thorium com-

pound, activity unknown. When we inspected the bottle it was apparently empty. However, the bottle was giving off several hundred mr/hr of gamma radiation. This was not consistent with my experience of what you would get with residual thorium contamination in a bottle. So, we used a portable multi-channel analyzer to determine the energies of the gamma emissions and by direct comparison with a known radium source, we determined that the radioactivity was radium. Now our task was to determine what the amount of radium activity was to ensure proper shipping and disposal.

The bottle was small, several inches tall. By taking gamma readings several feet from the bottle we determined the activity. In this instance, we used both an ion chamber and a microR meter. We used thumbrule J (2) from page 32 of the Rad Health Handbook, Jan 1970 version. It states that a one-milligram (mg) point source of radium will give a reading of one mr/hr at one yard. Our reading of 0.9 mr/hr equated to 0.9 mg of radium. And since one mg of radium is one millicurie (mCi) we had 0.9 mCi of radium. Using gamma measurements at different distances, we verified this activity using equation J (4) of the Rad Health Handbook and the gamma constant for radium from page 131.

$$mr / hr = n\Gamma / s^2$$

where n = number of millicurie s

Γ = mr/hr at one meter per mCi

(For Ra - 226; Γ = 0.825)

s = distance (meters)

Not all of these calculations came up with the same answer, but all were close. We used the highest estimate to be conservative and shipped the item for processing and disposal.

Of course, we had to put this on the shipping manifest using SI units (now required by 49CFR172.203(d)(4)). We used megabecquerels (MBq). This is an easy conversion. Take the number of mCi and multiply by 37 to get the number of MBq.

If you have any questions on this subject, you can contact David Horton at (309) 782-1759, DSN 793-1759, or HortonD@ioc.army.mil.

OCONUS ADVENTURES

BY RICK HOLTHOUSER

Every year we travel to military installations overseas to remove excess radioactive materials, give training and do Nuclear Regulatory Commission license inspections. We visit the Far East, Europe, Middle East, Alaska and less frequently, Puerto Rico and Panama. The Executive Agency does this work with in-house waste brokers and military transportation to save the Army and other Department of Defense customers significant resources over the cost of using a contractor.

From 1 February through 22 March 1999, Mr. Derek Cornette and I covered a big portion of Asia while completing our FY99 Far East Run for Army and Navy generators. We did license compliance inspections for the Industrial Operations Command (IOC)'s depleted uranium ammo and promethium-147 LAW rockets, inspected the Army Contaminated Equipment Retrograde Team (ACERT) pre-positioned MIL AN, gave training to the LLRW generators in Korea, and packaged and shipped all the excess radioactive material for disposal.

The 34-day run included stops at five sites in Korea, seven in Japan and six in Hawaii. The logistics of coordinating an extensive itinerary on a CONUS (inside the continental United States) trip is a significant challenge but for an OCONUS (outside the continental United States) trip it is much more complicated. We were fortunate that the personnel at each site were competent and efficient in laying out our scheduled stops and getting us to each one.

In Korea, we met with the U.S. and Republic of Korea (ROK) Army personnel to review DU inspection procedures. We met with the ROK installation commander at a tea ceremony. Partaking of local customs help give us helped establish a level of trust with the Koreans and gain a better understanding of their local concerns. They were very accommodating and accepted our suggestions for program improvements.

Our favored option is to ship the excess radioactive material back to the U.S. using military air, in which case we can usually have it out of country within five days. We must complete a Shipper's Declaration for Dangerous Goods and submit all paperwork through the local senior load handler. He has the authorization to approve or reject the shipment. One question we are frequently asked is

whether radioactive material must be shipped in performance oriented packages (POP this is *not* required).

Our main objective in Japan was to package, mark, label and manifest shipments to Hawaii for consolidation. We consolidate shipments in country and put materials from many different installations on one plane to save transportation costs. In between shipments we did a LAW rocket license to take maximum advantage of our OCONUS travel resources.

After shipping the material from the generators at all the other installations, we go to Hawaii to meet our shipments and consolidate all materials for shipment to United States. We begin by consolidating the material from the six installations in Hawaii six facilities, then add the others as they come in or leave instructions with the local shippers to add to the bulk shipment. We perform a quality control check on the paperwork and packaging before we consolidate them shipment into a Conex container. We then escort the consolidated shipment to the docks where we review the paperwork with the shipping company. When the paperwork is in order, the shipping company accepts the shipment. Since Hawaii is a member of the Northwest Compact, we send the materials to the Hanford, WA burial site for disposal.

This year's Far East Run was a resounding success. We received the cooperation and support of personnel from all the facilities we visited. This helped us provide needed training to the users of radioactive items. We were able to improve relations with the host nation's generators including the ROK, and we brought back challenges to address and correct on future trips to the Far East. I can't wait for the next one - Aloha.

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anywhere in the United States.

So permits are a pretty important part of shipping and disposing of radioactive waste. We are the one-stop-shop for DoD permits so please call us before shipping radioactive materials going for disposal. Send questions to Ms. Judy Woodson at (309) 782-188 , woodsonj@ioc.army.mil.

SOME STOPS ON THE OCONUS ADVENTURES



OSAN AIR FORCE BASE, KOREA

RADIOACTIVE WASTE STORAGE BUNKER - CAMP KELLY, KOREA



**US ARMY TEST,
MEASUREMENT AND
DIAGNOSTIC EQUIPMENT
ACTIVITY -KOREA**

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the RAD WASTE NEWS

Richard D. Conley, Editor